west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-2808B
Plant ID No.:	039-00075
Applicant:	Cranberry Pipeline Corporation (Cranberry)
Facility Name:	Horsemill Compressor Station
Location:	Cedar Grove, Kanawha County
SIC Code:	1311
Application Type:	Modification
Received Date:	December 26, 2012
Engineer Assigned:	Rex Compston, P.E.
Fee Amount:	$1000.00
Complete Date:	January 28, 2013
Due Date:	April 28, 2013
Applicant Ad Date	January 2, 2013
Newspaper:	*Charleston Newspapers*
UTM's:	Easting: 461.58 km Northing: 4232.14 km Zone: 17
Description:	Increase emissions of VOCs, benzene, toluene, ethyl benzene, xylenes, n-hexane, and total HAPs as a result of a new gas analysis.

DESCRIPTION OF PROCESS

This permit application seeks to increase the emission limits, pertaining to the glycol dehydration unit, established in R13-2808A. No other changes are proposed to the existing compressor engines or storage tanks.

Natural gas enters the facility via pipeline where the wet gas is first compressed to a higher pressure. Natural gas fired engines power compressors that compress the natural gas to a higher pressure. After compression, the wet gas is transferred to a TEG dehydration unit. The TEG dehydration unit removes excess water from the natural gas stream prior to being transferred to customers. The TEG attracts and removes the excess water from the natural gas. TEG that is saturated with water is called rich TEG. The rich TEG is heated through the reboiler where the water is boiled off through the still vent. Once the water has been removed from the TEG, it is called lean TEG. The lean TEG is re-circulated through the unit where the process begins again.

The reboiler has an exhaust stack where the by-products of natural gas combustion are vented. The TEG dehydration unit still vent emits VOC's and HAP's depending on the concentration of those constituents in the processed wet gas.

A new wet gas analysis taken on April 23, 2012 has created an exceedance of permitted HAP and VOC emissions. An update to R13-2808A is required to reflect the change in emissions using the recent wet gas analysis.

SITE INSPECTION

A site inspection was conducted on April 1, 2011 by Todd Shrewsbury of the DAQ Enforcement Section. The facility was operating in compliance at that time.

Directions as given in the permit application are as follows:

Traveling south on US-60, bear left onto CR-8/1 (Kellys Creek) for approximately 0.1 miles. Turn left on Horsemill Hollow Road for approximately 1.3 miles.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Maximum controlled point source emissions associated with this Modification for Cranberry's Horsemill Compressor Station are summarized in the table below.

Emission Point ID	Emission Unit ID	Process Unit	Pollutant	Maximum Controlled Emission Rate	
				Hourly (lb/hr)	Annual (ton/year)
RSV-1	RSV-1	Glycol Dehydration Unit Still Column	Volatile Organic Compounds	10.42	45.67
			Benzene	0.197	0.864
			Ethylbenzene	0.572	2.506
			Toluene	0.696	3.048
			Xylenes	0.820	3.594
			n-Hexane	0.181	0.791

Emissions were determined using GRI-GLYCalc V 4.0 wet gas analysis with a 20% buffer for normal variations in output.

The 20% buffer in HAP emission limits was proposed after observing and recording the differences in wet gas analysis from the same emission points between sampling events. Sampling data indicated up to a 20% difference between the current gas analysis and the previous gas analysis. Adding a 20% buffer would allow for natural variation in the natural gas. The 20% buffer would not trigger any Major Source or MACT thresholds (e.g. 10 TPY Year of any single HAP or 1 TPY of Benzene).

Emissions have increased from the previous permit as follows:

Pollutant	Change in Emission Rate	
	Hourly (lb/hr)	Annual (ton/year)
Volatile Organic Compounds	6.81	29.85
Benzene	0.027	0.144
Ethylbenzene	0.562	2.496
Toluene	0.556	2.428
Xylenes	0.77	3.384
n-Hexane	0.081	0.371

REGULATORY APPLICABILITY

The following rules apply to this permitting action:

45CSR2 (Particulate Air Pollution from Combustion of Fuel in Indirect Heat Exchangers)

Because the reboiler has a heat input less than 10 MMBtu/hr, the reboiler is exempt from monitoring, recordkeeping, and reporting under 45CSR2 Section 11. The reboiler is also exempt from the periodic testing requirements of subdivision 8.1.a and the monitoring requirements of subsection 8.2. The Director reserves the right to require testing pursuant to subdivisions 8.1.b and 8.1.c, because the reboiler's heat input is less than 100 MMBtu/hr under 45CSR2 Section 8.4.c.

45CSR10 (To Prevent and Control Air Pollution from the Emission of Sulfur Oxides)

The reboiler only combusts pipeline quality natural gas. According to the Federal Energy Regulatory Commission (FERC) limit for total sulfur of 20 grains per 100 cubic foot, compliance would be assured for the 45CSR10 limit of 2000 ppm.

45CSR13 (Permits for Construction, Modification, Relocation and Operation of Stationary Sources of Air Pollutants, Notification Requirements, Administrative Updates, Temporary Permits, General Permits, and Procedures for Evaluation)

45CSR13 applies to this source due to the fact that the emissions increase associated with the updated gas analysis constitutes a Modification since emissions have increased by over 6 pph and 10 tpy.

45CSR30 (Requirements for Operating Permits)

The Horsemill Compressor Station is a major source subject to 45CSR30, since this facility has the potential to emit over 100 tons of NOx. Changes authorized by this permit must also be incorporated into the facility's Title V operating permit. Commencement of the operations authorized by this permit shall be determined by the appropriate timing limitations associated with Title V permit revisions per 45CSR30.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

There will be small amounts of various non-criteria regulated pollutants emitted from the combustion of natural gas. However, due to the concentrations emitted, detailed toxicological information is not included in this evaluation.

AIR QUALITY IMPACT ANALYSIS

The facility will not be a major source as defined by 45CSR14. Based on the nature of the emissions and the annual emission rate, no air quality impact analysis was performed.

MONITORING OF OPERATIONS

There have been no changes to the monitoring requirements as a result of this permit application and proposed modification.

PERMIT LANGUAGE CHANGES

This 45CSR13 Modification only changes emission limits based on an April 23, 2012 wet gas analysis. There are no equipment, design capacity, or throughput changes. However, the following language has been changed with this permit:

1. The EPA address in condition 3.5.3 was updated to reflect the proper office for correspondence.
2. The emission limits in condition 5.1.2 were revised to reflect the most recent gas analysis with the 20% buffer for normal variations in output.

RECOMMENDATION TO DIRECTOR

The information provided in the permit application indicates that Cranberry's Horsemill Compressor Station meets all the requirements of applicable regulations. Therefore, impact on the surrounding area should be minimized and it is recommended that Horsemill Station should be granted a 45CSR13 Modification for their facility.

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Rex Compston, P.E.
Engineer

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Date